

### **REMARKS**

Claims 1-11, 15, and 17-23 are pending in the application. Claims 3-11, 17-20, 22, and 23 have been withdrawn from consideration as being directed to a non-elected invention. New claims 24-29 have been added to the application. Therefore claims 1, 2, 15, 21, and 24-29 are at issue.

Claim 1 has been amended to clarify that the hydrogel comprises superabsorbent polymer particles, a hydrophobic compound, and an optional hydrophilic compound. Support for this amendment can be found in the specification at page 1, lines 15-16; page 4, lines 26-33; page 14, lines 4-8; and original claim 4, for example. The form of claim 1 has been improved to clarify that the solution or suspension is aqueous and to provide a proper antecedent basis for an element in the claim.

Claim 1 also has been amended to recite functional features of the claimed hydrogel, i.e., having a thickening capacity wherein 40% to 90% of an aqueous solution or suspension is thickened from the top down. Support for this amendment can be found at page 15, lines 3-7 of the specification. In addition, claim 2 has been amended to recite additional functional features of the claim hydrogel. It is well known the functional language is permissible in claims. See M.P.E.P. §2173.05(g). In particular, functional language is permissible, as long as definite boundaries are set, and often is used when a physical or chemical change or property cannot be adequately described, or is not known, but the effects of the physical or chemical change or property is known and can be claimed. In such a case, there is no other way for applicants to claim the invention. The functional features recited in claims 1 and 2 meet these requirements, i.e., have definite boundaries, are easily determined using the teachings of the procedures and examples disclosed in the specification, and there is no other way for applicants to claim the invention.

Claim 15 has been amended to clarify the identity of the hygiene articles recited in the claim. Support for this amendment can be found in the specification at page 15, lines 12-15.

New claims 24-29 are supported by original claims 4-9 and the specification at page 6, lines 20-36, and page 7, lines 10-32, for example.

The claimed invention is directed to a hydrogel having a specific floatability. The claimed hydrogel separates into two portions upon addition to a container filled with an aqueous fluid. One portion of the hydrogel sinks to the bottom of the container and hydrogel swelling starts from the bottom in an upward direction. The other hydrogel portion remains on the water surface and swells starting from the top in a downward direction.

Accordingly, the claimed hydrogel comprises at least two different types of superabsorbent polymer particles. In accordance with the present disclosure, a hydrogel containing such a mixture of superabsorbent polymer particles can easily be prepared in one step by adding a hydrophobic compound and an optional hydrophilic compound to commercially available superabsorbent particles.

As stated in the specification at page 5, lines 12-21:

"The amounts of hydrophilic and hydrophobic particles are advantageously chosen such that not only an increased rate of swell but also a partial floating of the superabsorbent particles on the fluid surface at the start of the swelling process is achieved. The additional coating with hydrophobic particles causes a portion of the superabsorbent to remain on the surface of the fluid to be thickened after all the superabsorbent needed has been added to the fluid to be thickened. A further portion of this superabsorbent thus treated slowly sinks into the solution to be thickened, since superabsorbents based on polyacrylates normally have a higher density than the solutions to be thickened. Without treatment, a commercially available superabsorbent would simply just sink into the solution immediately after addition."

Claim 1 stands rejected under 35 U.S.C. §112, first paragraph, for lack of enablement. In response, claim 1 has been amended to recite that the hydrogel comprises superabsorbent polymer particles, such as the polymers disclosed in the specification at pages 10-12, and a hydrophobic compound. The superabsorbent polymer particles disclosed in the specification cover essentially all known superabsorbent polymers, as set forth in the numerous patents and the "Modern Superabsorbent Polymer Technology" textbook cited in the specification. Further, the terms hydrogel and superabsorbent polymer are well-known in the art, as set forth in the specification, at page 1, lines 15-31 and in the "Modern Superabsorbent Polymer Technology" textbook.

Claim 1 also stands rejected under 35 U.S.C. §112, second paragraph, as being incomplete by omitting a structural element. In response, applicants have defined the hydrogel as comprising superabsorbent particles, a hydrophobic compound, and an optional hydrophilic compound. Applicants also recite functional properties of the hydrogel. Other embodiments of the claimed hydrogel are recited in new claims 24-29. Accordingly, applicants now recite the essential features of the claimed hydrogel.

It is submitted that amended claim 1 fully complies with 35 U.S.C. §112, first and second paragraphs, and that the rejections under 35 U.S.C. §112 should be withdrawn.

Claim 1 stands rejected under 35 U.S.C. §102(b) as being anticipated by, or alternatively under 35 U.S.C. §103 as being obvious over, Engelhart et al. U.S. Patent No. 4,931,497 ('497). Applicants traverse this rejection.

It is axiomatic that "[A]nticipation requires a showing that each limitation of a claim is found in a single reference, either expressly or inherently." *Atofina v. Great Lakes Chemical Corp.*, 441 F.3d 991, 999 (Fed. Cir. 2006). With further respect to a rejection under 35 U.S.C. §102(b), MPEP §2131 states:

"TO ANTICIPATE A CLAIM, THE REFERENCE MUST  
TEACH EVERY ELEMENT OF THE CLAIM

'A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference.' *Verdegaal Bros. v. Union Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987)... 'The identical invention must be shown in as complete detail as is contained in the...claim.' *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989). The elements must be arranged as required by the claim, but this is not an *ipsissimis verbis* test, i.e., identity of terminology is not required. In *re Bond*, 910 F.2d 831, 15 USPQ2d 1566 (Fed. Cir. 1990)."

The '497 publication fails to meet this strict standard with respect to the present claims.

To establish a *prima facie* case of obviousness, three requirements must be satisfied. First, as the U.S. Supreme Court held in *KSR International Co. v. Teleflex Inc. et*

*al.*, 127 S.Ct. 1727 (2007), "a court must ask whether the improvement is more than the predictable use of prior art elements according to their established functions. ...it [may] be necessary for a court to look to interrelated teachings of multiple patents; the effects of demands known to the design community or present in the marketplace; and the background knowledge possessed by a person having ordinary skill in the art, all in order to determine whether there was *an apparent reason* to combine the known elements in the fashion claimed by the patent at issue. ...it can be important to *identify a reason that would have prompted a person of ordinary skill in the relevant field to combine the elements* in the way the claimed new invention does... because inventions in most, if not all, instances rely upon building blocks long since uncovered, and claimed discoveries almost of necessity will be combinations of what, in some sense, is already known." (emphasis added, *KSR, supra*). Second, the proposed modification of the prior art must have had a reasonable expectation of success, determined from the vantage point of the skilled artisan at the time the invention was made. *Amgen Inc. v. Chugai Pharm. Co.*, 18 USPQ2d 1016, 1023 (Fed. Cir. 1991). Lastly, the prior art references must teach or suggest all the limitations of the claims. In *re Wilson*, 165 USPQ 494, 496 (C.C.P.A. 1970).

As recently articulated by the Court of Appeals for the Federal Circuit in *Ortho-McNeil Pharmaceutical Inc. v. Mylan Laboratories Inc.*, 86 USPQ 2d, 1196, 1201-2 (Fed. Cir. 2008):

"As this court has explained, however, a flexible TSM test remains the primary guarantee against a non-statutory hindsight analysis such as occurred in this case. *In re Translogic Tech., Inc.* 504 F.3d 1249, 1257 [84 USPQ 2d 1929] (Fed. Cir. 2007) ("[A]s the Supreme Court suggests, a flexible approach to the TSM test prevents hindsight and focuses on evidence before the time of invention.)."

The '497 patent discloses hydrophilic swellable graft polymers ('497 patent, abstract). The disclosed polymers are standard superabsorbent polymers capable of absorbing water and aqueous solutions ('497 patent, column 1, lines 48-51). The disclosed polymers are of a type disclosed at pages 10-12 of the specification. The '497 patent fails to teach or suggest a hydrophobic compound.

The '497 patent therefore fails to teach each and every element as set forth in claim 1. Accordingly, a difference exists between claim 1 and the '497 patent such that a rejection under 35 U.S.C. §102(b) cannot be maintained, see legal authority above. In addition, a *prima facie* obviousness rejection of claim 1 over the '497 patent cannot be maintained at least because the cited prior art reference(s) must teach or suggest all the limitations of the claims, see legal authority above.

The rejection of claim 1 as being anticipated by, or alternatively obvious over, the '497 patent therefore should be withdrawn.

Claim 1 stands rejected under 35 U.S.C. §102(b) as being anticipated by, or alternatively as obvious over, Engelhart et al. U.S. Patent No. 5,041,496 ('496). Applicants traverse this rejection.

Like the '497 patent, the '496 patent discloses hydrophilic swellable graft polymers ('496 patent, abstract). The disclosed polymers are standard superabsorbent polymers capable of absorbing water and aqueous solutions ('496 patent, column 1, lines 55-58). The disclosed polymers are of a type disclosed at pages 10-12 of the specification. The '496 patent fails to teach or suggest a hydrophobic compound.

The '496 patent therefore fails to teach each and every element as set forth in claim 1. Accordingly, a difference exists between claim 1 and the '496 patent such that a rejection under 35 U.S.C. §102(b) cannot be maintained, see legal authority above. In addition, a *prima facie* obviousness rejection of claim 1 over the '496 patent cannot be maintained at least because the cited prior art reference must teach or suggest all the limitations of the claims, see legal authority above.

The rejection of claim 1 as being anticipated by, or alternatively obvious over, the '496 patent therefore should be withdrawn.

Claim 1 stands rejected under 35 U.S.C. §102(b) as being anticipated by, or alternatively as obvious over, Engelhart et al. U.S. Patent No. 5,011,892 ('892). Applicants traverse this rejection.

Like the '497 and '496 patents, the '892 patent discloses hydrophilic swellable graft polymers ('892 patent, abstract). The disclosed polymers are standard superabsorbent polymers capable of absorbing water and aqueous solutions ('892 patent, column 1, lines 65-68). The disclosed polymers are of a type disclosed at pages 10-12 of the specification. The '892 patent fails to teach or suggest a hydrophobic compound.

The '892 patent fails to teach each and every element as set forth in claim 1. Accordingly, a difference exists between claim 1 and the '892 patent such that a rejection under 35 U.S.C. §102(b) cannot be maintained, see legal authority above. In addition, a *prima facie* obviousness rejection of claim 1 over the '892 patent cannot be maintained at least because cited prior art reference(s) must teach or suggest all the limitations of the claims, see legal authority above.

The rejection of claim 1 as being anticipated by, or alternatively obvious over, the '892 patent should therefore be withdrawn.

Claims 1, 2, and 15 stand rejected under 35 U.S.C. §103 as being obvious over Benson et al. U.S. Patent No. 5,092,858 ('858). Applicants traverse this rejection.

The '858 patent is directed to gelling an aqueous fluid as quickly as possible. The '858 patent achieves a fast gellation by positioning a gelling agent along the entire vertical length of a canister, as illustrated in Figs. 5 and 6. In particular, a gelling agent is adhered to a substrate such that as a fluid is added to the canister, polymer particles along the entire vertical height of the canister are available to contact and gel the liquid.

The embodiment of Fig. 1 of the '858 patent relied upon by the examiner is a prior art method of gelling a liquid in a canister. Figs. 2-4 illustrate other prior art methods. In Fig. 1, the '858 patent teaches no more than addition of a gelling powder to the surface of a liquid (column 3, lines 57-60). As stated in column 4, lines 37-46:

"As can be seen in FIG. 1, canister 10 is a cup shaped container configured in the usual manner of suction canisters with walls 12 diverging from bottom 15 of the top cap 14 thereof. As can be seen in FIG. 1, the prior art arrangement illustrates a gel powder 20 introduced onto the top surface of the contained

fluid 13. As further illustrative of the prior art arrangement, the arrow 16 illustrates the diffusion length of the material 20 to extend to the liquid 13 in the bottom of container 10."

The '858 patent therefore teaches no more than adding the gelling agent to the top surface of a contained fluid, and the gelling agent traverses the length of the canister to gel as it falls from the fluid surface to the bottom of the canister. This is precisely the disadvantage the present invention overcomes.

The problem addressed by the '858 patent, and overcome by the presently claimed invention, is as follows. As the gelling material added to the surface of a liquid falls to the bottom of the canister, gellation may begin immediately, but *cannot* be completed immediately. If complete gellation occurred immediately, *no* gelling agent would be available to fall to the bottom of the container and gel the fluid as it travels downward. The gelling agent therefore falls toward the bottom of the canister, gelling as it sinks, but requiring a relatively long time in order to complete gellation.

The '858 patent teaches overcoming this problem by securing a gelling agent to a substrate over the entire vertical height of the canister, such that fresh gelling agent is continually available as the canister fills from the bottom-up with a liquid. The '858 patent, which teaches securing of the gelling agent, actually teaches away from the presently claimed hydrogel that is added as a free powder to a fluid to be gelled.

The '858 patent is absolutely silent with respect to claimed features of the invention, i.e., floatability, 40%-90% gellation from the top surface down, and the remainder of the gellation from the bottom up. In addition, the '858 patent merely discloses standard superabsorbent polymers at column 3, lines 29-51. The '858 patent is silent with respect to a hydrogel containing superabsorbent polymer particles and a hydrophobic compound.

Claims 1 and 2 recite functional properties of the hydrogel, i.e., a thickening capability of thickening 40%-90% of a solution from the top surface, a solidification time of less than 120 seconds, and a blood absorbance of at least 10 g/g. These functional limitations of the claimed hydrogel differentiate the claimed hydrogels from prior hydrogels.

Claim 15 now recites particular hygiene articles that are neither taught nor suggested in the '858 patent.

In summary, the '858 patent fails to teach or suggest all the limitations of the claims, and, accordingly, a *prima facie* obviousness rejection of claims 1, 2, and 15 cannot be maintained, see legal authority above. The present rejection of claims 1, 2, and 15 under 35 U.S.C. §103 over the '858 patent therefore should be withdrawn.

Claim 21 stands rejected under 35 U.S.C. §103 as being obvious over the '858 patent in view of WO 98/42193 (WO '193). Applicants traverse this rejection.

The '858 patent is discussed above. The patentability of claim 1 from which claim 21 depends is discussed above. WO '193 fails to overcome the deficiencies of the '858 patent.

WO '193 discloses a combination of superabsorbent polymers and an iodine complex. The disclosed superabsorbent polymers are standard superabsorbent polymers. WO '193 fails to teach or suggest a hydrogel, as claimed, containing a hydrophobic compound. Accordingly, a combination of the '858 patent and WO '193 fails to teach or suggest each and every element recited in the claim 21.

In summary, for the reasons set forth above with respect to the '858 patent, and because the combination of references fail to teach every element of claim 21, the rejection of claim 21 as being obvious over the '858 patent in view of WO '193 cannot be maintained and should be withdrawn.


It is submitted that all claims are in a form and condition for allowance. An early and favorable action on the merits is respectfully requested.



Should the examiner wish to discuss the foregoing, or any matter of form in an effort to advance this application toward allowance, the examiner is urged to telephone the undersigned at the indicated number.

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Respectfully submitted,

By 

James J. Napoli

Registration No.: 32,361  
MARSHALL, GERSTEIN & BORUN LLP  
233 S. Wacker Drive, Suite 6300  
Sears Tower  
Chicago, Illinois 60606-6357  
(312) 474-6300  
Attorney for Applicant